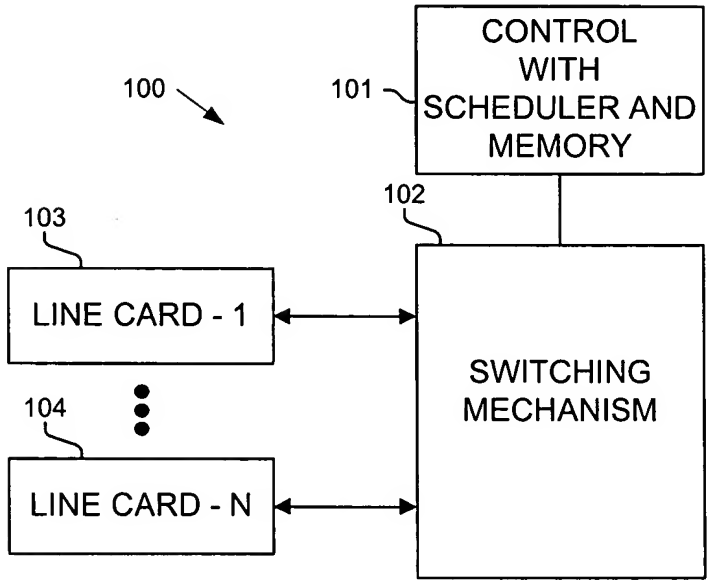
100
101
CONTROL WITH SCHEDULER AND MEMORY
102
103
LINE CARD - 1
104
LINE CARD - N
SWITCHING MECHANISM

FIGURE 1A

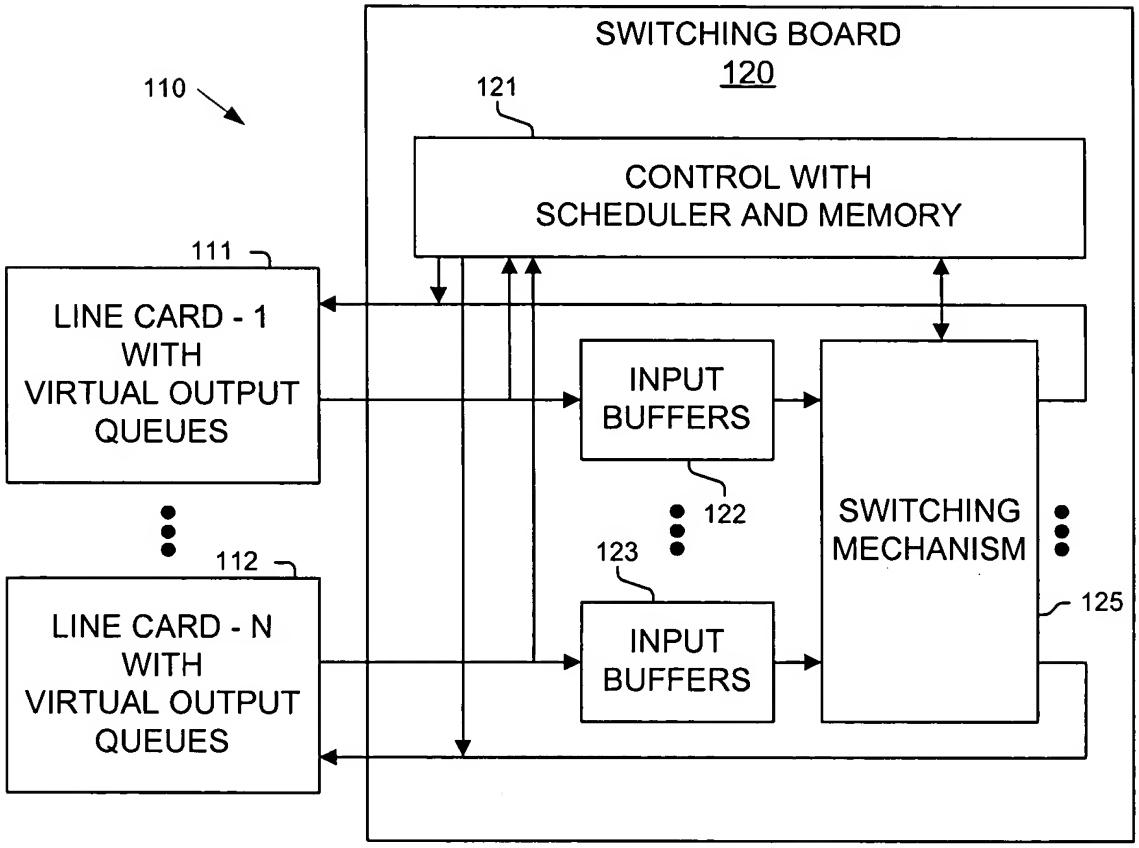
SWITCHING BOARD
120
110
121
CONTROL WITH
SCHEDULER AND MEMORY
111
LINE CARD - 1
WITH
VIRTUAL OUTPUT
QUEUES
INPUT
BUFFERS
122
SWITCHING
MECHANISM
123
125
112
LINE CARD - N
WITH
VIRTUAL OUTPUT
QUEUES
INPUT
BUFFERS

FIGURE 1B

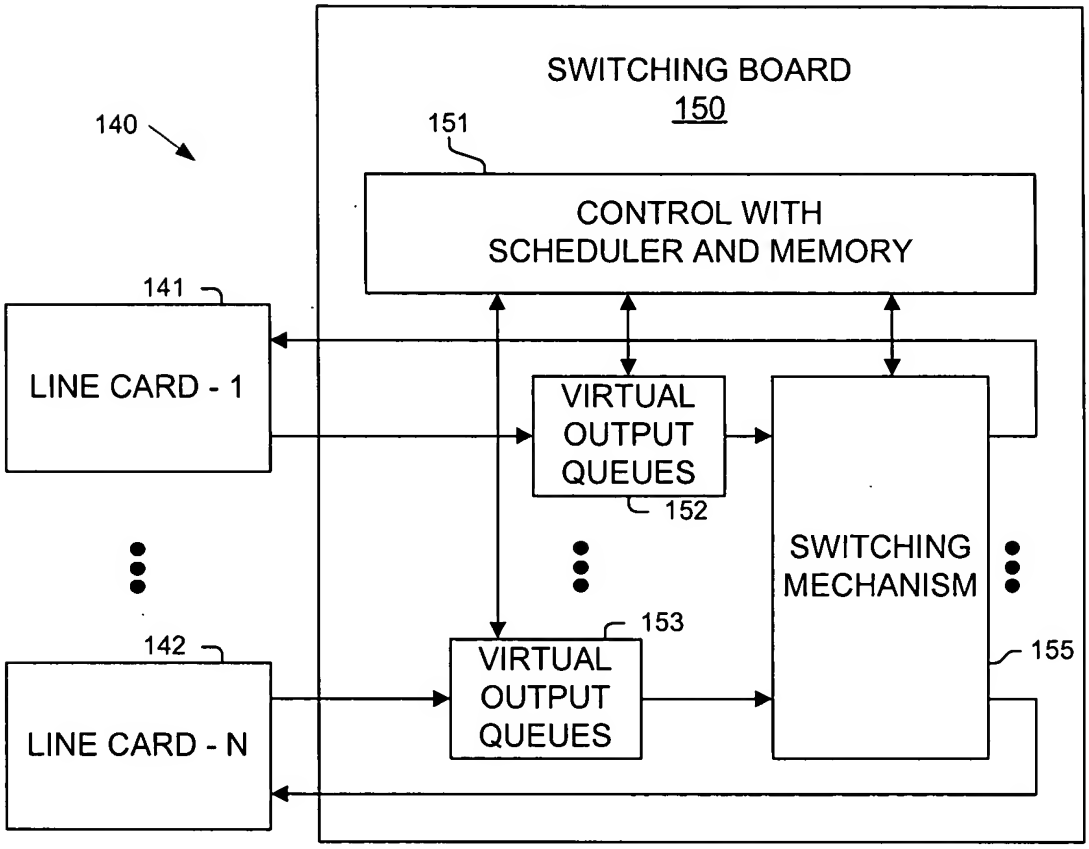
SWITCHING BOARD
150
140
151
CONTROL WITH
SCHEDULER AND MEMORY
141
LINE CARD - 1
VIRTUAL
OUTPUT
QUEUES
152
SWITCHING
MECHANISM
153
142
155
VIRTUAL
OUTPUT
QUEUES
LINE CARD - N

FIGURE 1C

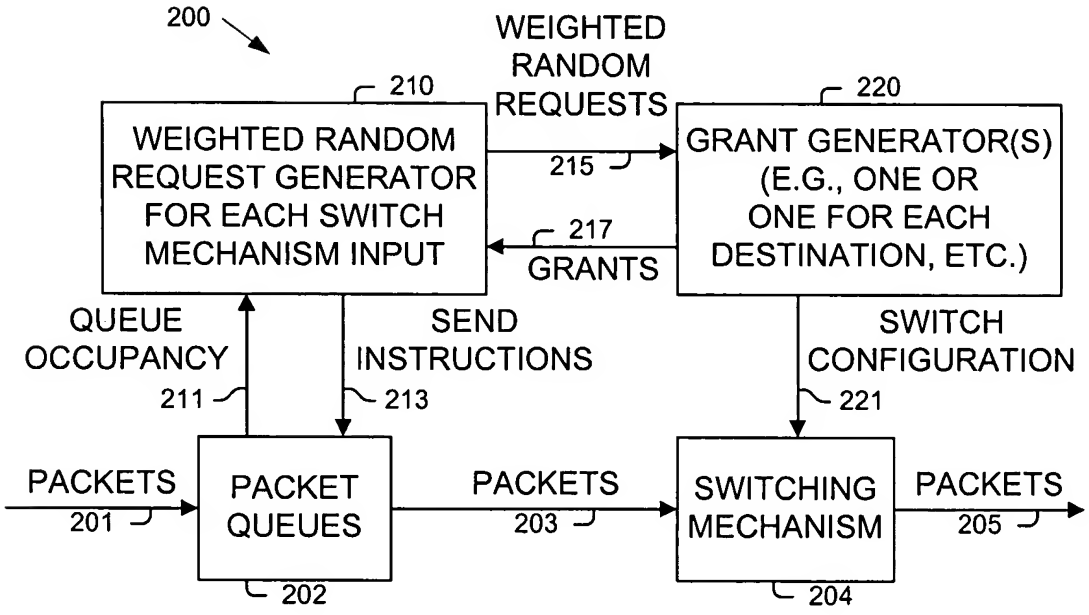
200
WEIGHTED RANDOM REQUESTS
210
220
WEIGHTED RANDOM REQUEST GENERATOR FOR EACH SWITCH MECHANISM INPUT
215
GRANT GENERATOR(S) (E.G., ONE OR ONE FOR EACH DESTINATION, ETC.)
217
GRANTS
QUEUE OCCUPANCY
211
SEND INSTRUCTIONS
213
SWITCH CONFIGURATION
221
PACKETS
201
PACKET QUEUES
202
PACKETS
203
SWITCHING MECHANISM
204
PACKETS
205

FIGURE 2A

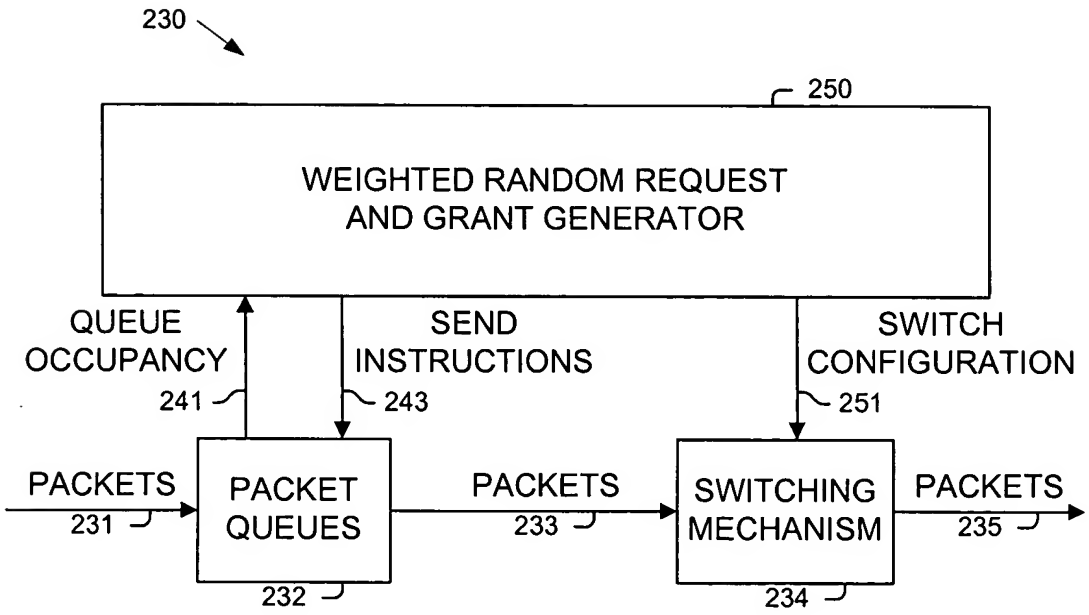
230
250
WEIGHTED RANDOM REQUEST AND GRANT GENERATOR
QUEUE OCCUPANCY
241
SEND INSTRUCTIONS
243
SWITCH CONFIGURATION
251
PACKETS
231
PACKET QUEUES
232
PACKETS
233
SWITCHING MECHANISM
234
PACKETS
235

FIGURE 2B

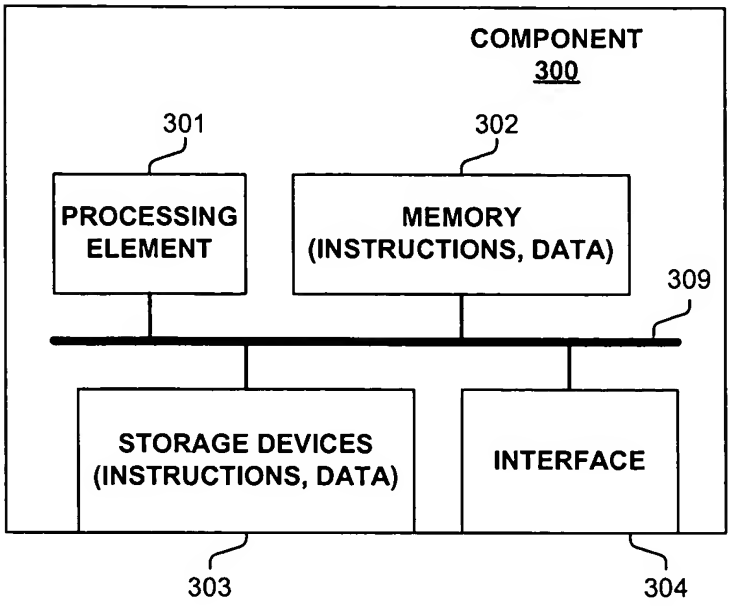

FIGURE 3

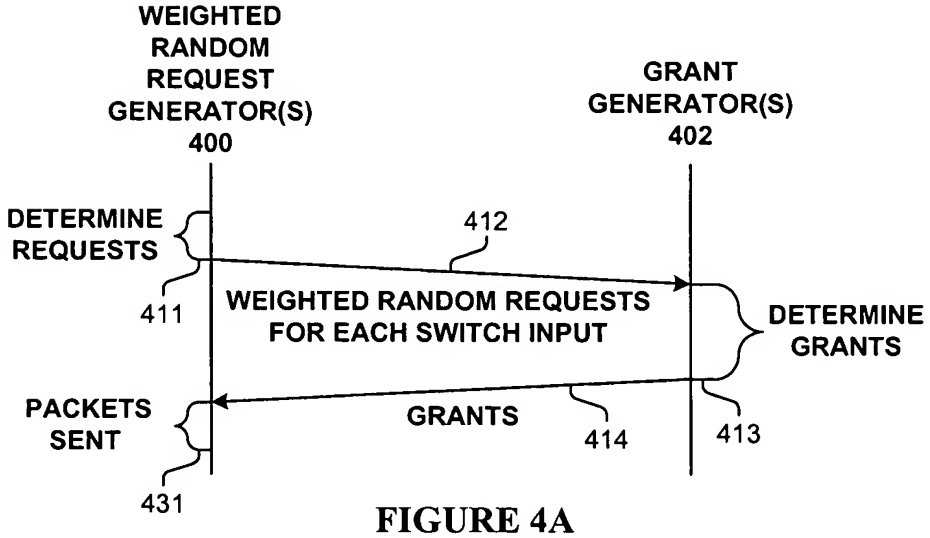

FIGURE 4A

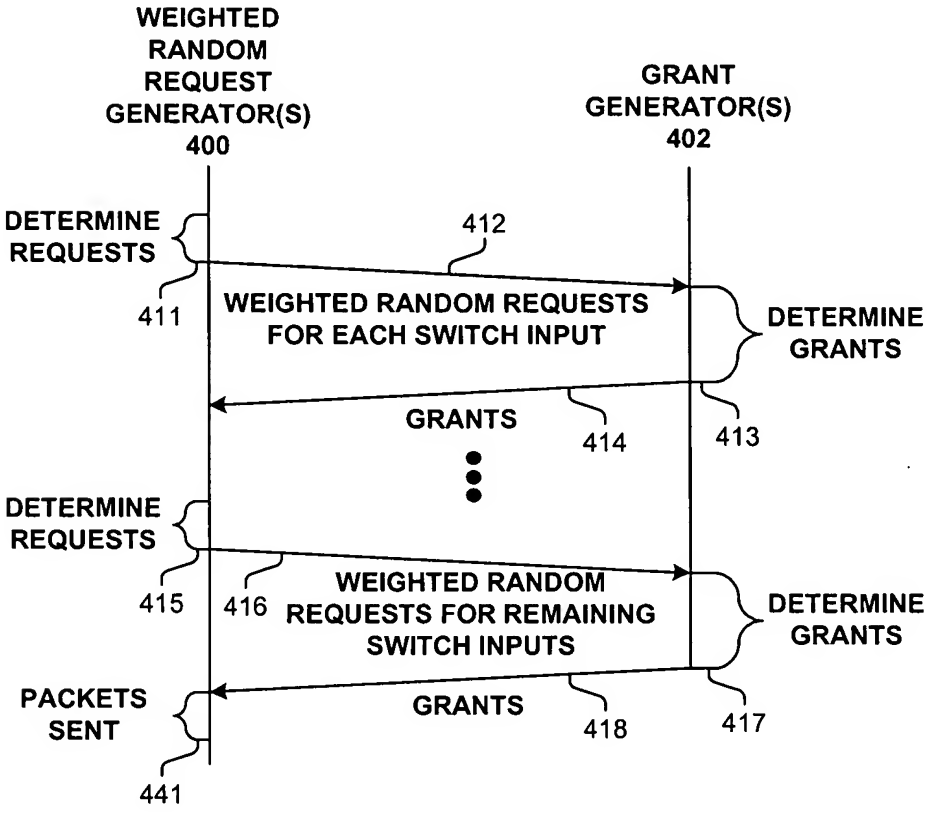
WEIGHTED RANDOM REQUEST GENERATOR(S) 400
GRANT GENERATOR(S) 402
DETERMINE REQUESTS
412
411
WEIGHTED RANDOM REQUESTS FOR EACH SWITCH INPUT
DETERMINE GRANTS
GRANTS
414
413
DETERMINE REQUESTS
415
416
WEIGHTED RANDOM REQUESTS FOR REMAINING SWITCH INPUTS
DETERMINE GRANTS
PACKETS SENT
GRANTS
418
417
441

FIGURE 4B

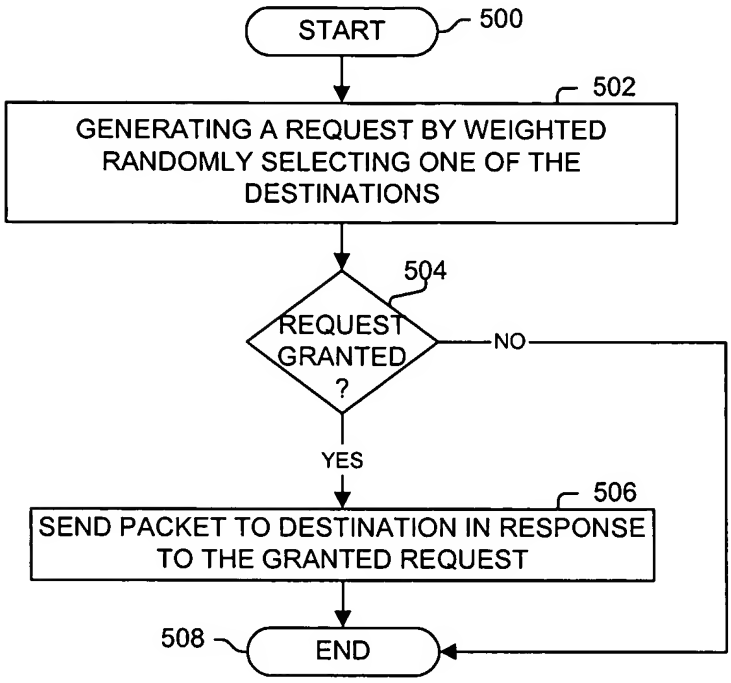

FIGURE 5A

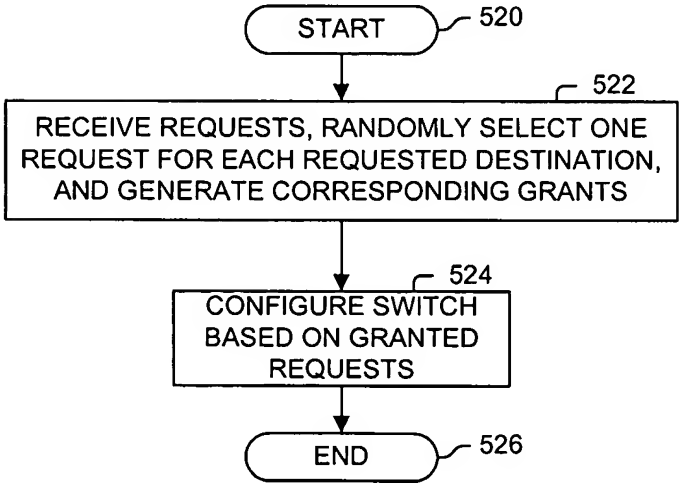

FIGURE 5B

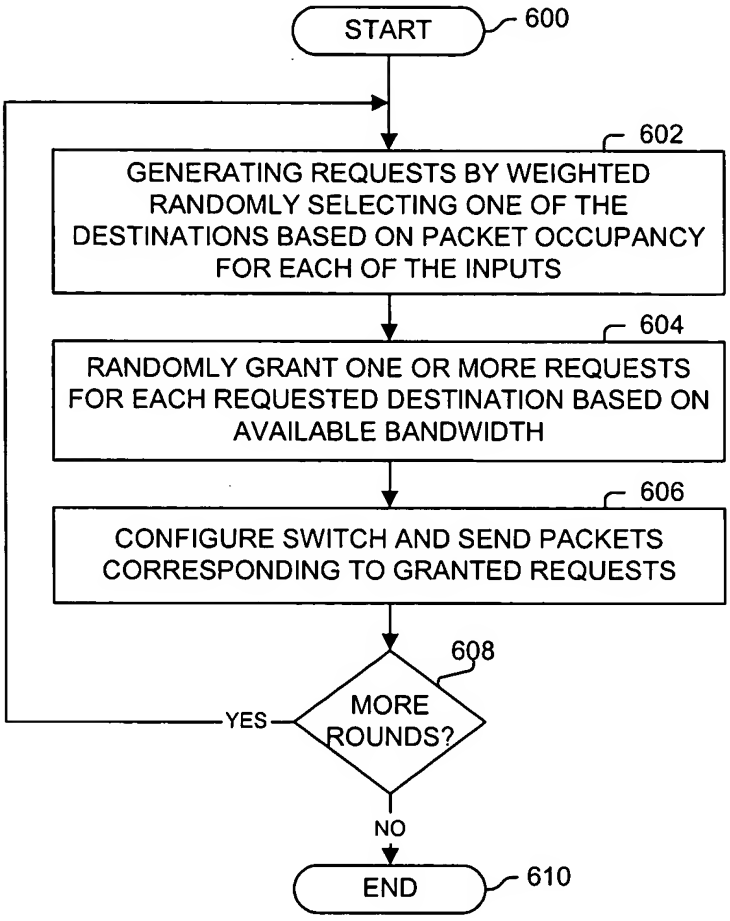
START
600
602
GENERATING REQUESTS BY WEIGHTED RANDOMLY SELECTING ONE OF THE DESTINATIONS BASED ON PACKET OCCUPANCY FOR EACH OF THE INPUTS
604
RANDOMLY GRANT ONE OR MORE REQUESTS FOR EACH REQUESTED DESTINATION BASED ON AVAILABLE BANDWIDTH
606
CONFIGURE SWITCH AND SEND PACKETS CORRESPONDING TO GRANTED REQUESTS
608
MORE ROUNDS?
YES
NO
END
610

FIGURE 6